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Exhibition of the U. S. Agricultural Society.

We learn from the Philadelphia *Ledger* that extensive preparations are making for the above affair, which is to take place at Philadelphia, Pa., on Oct. 7th, 8th, 9th and 10th. The Society has secured about 24 acres of ground, near the former site of the State Exhibition. By this arrangement all the drinking booths, shanties, and shows, which heretofore clustered outside of the front of the enclosure, will be got rid of. The fence is to be set back from the Pennsylvania Railroad, so as to allow room for a carriage-way and entrance on the west side, giving an opportunity for those crossing the Wire-bridge, or coming from the West, to avoid the throng passing in by the river road.

The trotting course will be in the southern portion of the ground, and the ring will be one half mile around. Stands for the accommodation of from three to four thousand spectators will be erected convenient to the course. The stalls for the cattle will extend nearly around the enclosure; agricultural implements, machinery, produce, &c., will be exhibited in tents.

One of the greatest features of the exhibition will be the grand banquet, on the last day, for ladies and gentlemen. There will be room enough under the tents to seat 3000 persons.

Terrible Accidents on Railroad and Steamboat.

Only last week we directed attention to the insecurity of life on our railroads, but we little thought then that we would have, so soon, to chronicle an account of the most dreadful railroad accident that has yet taken place in our country.

On the 17th inst. a large excursion train of nearly 1 500 persons from Philadelphia, on the North Pennsylvania R.R., was run into by the down train while passing a curve at a tremendous speed, by which five cars of the excursion train were crushed to pieces, set on fire, and entirely consumed. No less than six-ty-one persons were killed outright and burned amid the flames, and one hundred and four dangerously wounded. The scene was most appalling and heart-rending.

On the same day, the steamer *Northern Indiana* took fire on Lake Erie and was burned, by which accident tairty-one persons are stated to have perished.

These accidents were, undoubtedly, caused by gross negligence and carelessness. Our country has a most unenviable reputation for such calamities. One great cause of carelessness and recklessness on our railroads and steamboats is the impunity with which guilty parties escape punishment.

Western Agency for the Sale of Patents.

We invite the attention of our readers to the advertisement of Messrs. James W. Macdonald & Co., of St. Louis, which appears in another column. This firm is well recommended to us as one of uprightness and responsibility. If any of our readers desire to bring out their inventions at the West, they will no doubt find the agency of Messrs. Macdonald & Co. efficient for this purpose.

IMPROVED SEED PLANTING MACHINE.

Improved Seed Planter.

The invention illustrated by our engraving is intended for broad-cast seed sowing, covering, and harrowing. The grain to be planted is contained within the two cylindrical holders, A A′, both of which revolve upon a common shaft, I. Motion is given to the shaft by means of belts and pulleys, which connect with the cart wheels. The grain is introduced into the holders, by withdrawing one of the screens, B, which slides out for that perpose.

When the holders rotate, the grain passes down through the screens, strikes upon the inclined board, D, and falls to the ground. E are guides placed upon the surface of D, and standing upon the edges as shown. Their object is to guide the grain so that when the machine is used on hilly ground, the seed will not all slide down on one side, and thus be imperfectly sown. The guides cause the grain to be evenly delivered from the machine, no matter what the nature of the ground. The guides are pivoted, and their upper ends all connected together by means of a rod, F; therefore when F is operated, all of the guides will be simultaneously moved. Where a hill is very steep, or where, from other special circumstances, it is desirable to control the delivery of the seed from the board, D, it may be instantly done by moving F, through its handle, G. C are covers for the screens; the covers move in the direction of the arrow and close over the screens, so that the discharge of the grain may be accurately regulated or wholly cut off, as desired.

H is a revolving harrow, for covering the grain. It is attached to the rear of the machine, and receives motion from the cart wheel by pulleys and chains, as shown. J is a lever whereby the driver lifts the harrow from the ground, when it is not wanted for use.

This machine is quite simple in construction and convenient for use. The inventor claims for it the following among other advantages, viz.: The harrow will cut up the ground more freely than those in common use; the soil being lifted by the harrow will fall and thoroughly cover the grain; the harrow teeth being placed on a cylinder are not liable to clog up with rubbish. The seed may be planted in drills or broad-cast; it will sow all kinds of grain, also cotton seed, lime, plaster, &c. The apparatus can be readily set to sow any desired quantity of seed per acre. Grain sowed by this machine will be likely to grow up evenly, since it will be evenly sown and harrowed in. The loss occasioned by the trampling of the animal's feet, estimated by some at twenty per cent., is avoided, for the grain falls behind the point of traction. Less power, we are told, is required to draw the machine than to drag a common harrow. Invented by Hosea Willard, Vergennes, Vt., from whom further information can be had. Patented May 13, 1856.

Watering Streets.

In all cities, it is a common practice, in warm weather, to sprinkle the streets, by an apparatus on a cart, drawn by a horse. The object of watering the streets is to keep down the dust, and cool the atmosphere by the rapid evaporation of the water. It is an unclean and unhealthy policy, which requires the streets to be watered to allay the dust. The water mixes with the dust, and converts it into a stratum of adhesive mud—dirty and disagreeable. By the rapid evaporation, also, of the moisture from this mud, some noxious effluvia is generated and carried into the atmosphere, and thus must be in some degree unhealthy. During very warm weather every street in the city should be sprinkled and the dust swept up and carried off every night. Twice the amount of work could be done in cleaning the streets at night, when carriages, carts, and pedestrians cease to obstruct operations, as could be done during the day time. By thus having the streets perfectly free from dust, the sprinkling of them with water during the day, to cool the atmosphere, would be refreshing and pleasant, as no mud would be formed, and the amount of noxious effluvia, generated would be very limited. These suggestions, we think, are worthy the attention of the authorities in every city in our land.

Louisville Mechanic's Institute.

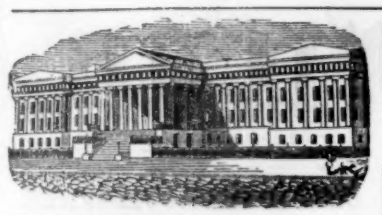
We have received the prospectus of this Institution for its Annual Exhibition, which opens at Louisville, Ky., in September 30th, and closes sometime in October. The society is in a very vigorous and prosperous condition. It is doing more for the improvement and benefit of mechanics than any institution of the kind that we know of in the Southwest. One of its most powerful and successful agencies in this good work is the dissemmination of new and useful knowledge. It regards intelligence as the basis of all true progress, and shapes its measures accordingly The officers are capable and energetic men.

The exhibition this year will, we trust, be the largest and best ever given by the Institute. Gold, silver, and bronze medals, and diplomas will be awarded for such articles as the Judges shall decide to be of superior merit, and special premiums will be awarded for the most meritorious articles offered in the exhibition.

Death of a Distinguished Civil Engineer.

Recently, at sea, on board the steamer *Grenada*, from Aspinwall to New Orleans, Alexander Campbell, of Albany, N. Y., closed his eyes in "the sleep which knows no waking." When very young he was employed under Mr. McAlpine as superintending engineer of the noble acqueduct of the Erie Canal over the Mohawk at Cohoes, N. Y. He was associated with his elder brother, Allan Campbell, as engineer, for some years past, in Chili, Peru, and Brazil, and with him assisted in building the first railroad in the world south of the equator. He traversed the continent of South America several times, crossing the Andes and encountering great perils, and had performed one of those journeys, not without serious risk of life, just before embarking for home.

The *Medical Gazette* states that Dr. Anders, of this city, has discovered a method of impregnating Croton water with iodine for medical purposes.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JULY 13, 1856.

STRAW CUTTER—Warren S. Bartle and Ebenezer Vaughan, of Newark, N. Y.: We claim the mode of operating the knife by means of the lever, F, and secondary pitman, L, in combination with the knife and main pitman, H, by which a variable downward drawing stroke is effected.

PLOWS—Alvin Barton, of Syracuse, N. Y.: I claim joining the upper and front points of the body of the plane to the coulter, the whole being arranged and operated substantially in the manner and for the purpose set forth.

CORN PLANTERS—M. Beniess, of Lyme, Ohio: I claim arranging the frame upon the axle and wheels, and connecting the point of draft behind and below the axle, and in combination with the arm, O, and pins, in the manner substantially as described for the purpose set forth.

ELECTRO-MAGNETIC FOG BELL—A. Barbarin and B. F. Simms, of New Orleans, La. Patented in England Aug. 17th, 1855: We do not claim as our invention the electro-magnetic alarm or signal bell, nor any of the parts separately of the fog bell apparatus, but confine our claim to the application of electricity and magnetism to the ringing of fog bells, substantially in the manner set forth.

CONTROLLING FEED-WATER APPARATUS OF STEAM BOILERS—Benjamin F. Bee, of Wareham, Mass.: I do not claim the employment or a float in any of the ordinary methods for regulating the hight of water in steam boilers.

But I claim controlling the feed water apparatus of steam boilers by the float, A and the intermediate means, or their equivalents between it and the feed apparatus, and connected with the counterbalance, L, or not, the parts being arranged and operated substantially as set forth.

NUTMEG GRATERS—George Blanchard, of New York City: I claim the application and arrangement of the self-sliding grater, B, in connection or inside of the hollow cork-screw handle or tube, A, so that when the whole structure is shaken with one hand, the nutmeg is grated by the sliding grater, B.

ROPE MACHINES—Thomas G. Boone, of Brooklyn, N. Y.: I claim, first, the arrangement of the stand spindles with their axes all in the same line with each other, and with the axis of the laying spindle, substantially as described, or in an equivalent manner, whereby I am enabled to put in a fore-hard equal in turn to that of the lay, without rotating the strand spindles.

Second, I claim the arrangement of gearing whereby, during the rotation of the laying spindle, the strand spindles may be kept stationary or have a slight rotary motion imparted to them, either in the same or in a contrary direction with the laying spindle, consisting of the stationary gear, L, the shafts, L L1 L2, with their gears, M M1 M2, and N N1 N2, and the gears, J J1 J2, and K K1, on the strand spindles, all operating substantially as described.

Third, I claim the conducting tubes, O O1 O2, furnished with rollers, j j, or their equivalents, revolving around the axis of the laying spindle and spool spindles and rotating at the same time on their own axes, operating in continuation with the above described arrangement of strand spindles, to take out the first additional twist received by the strand, and carry it forward to produce a fore-hard in the rope.

TURNING ORNAMENTAL FORMS—P. C. Cambridge, Jr. of Enfield, N. H.: I claim the sliding carriage, J, with tools, Q R, attached to it, as shown, the carriage, J, being fitted transversely on a carriage, B, substantially as shown, for the purpose specified.

I further claim the carriage, J, in combination with the collar, I, and cutters, G G, when the parts are placed on the carriage, B, and operating as described.

I also claim the polygonal notched bar or gauge rack, C, arranged as shown, by which the movement of the carriage B is regulated according to the character or nature of the work to be done, and the stuff beaded in the desired manner.

MARBLE SAWING MACHINE—Ira Carter, of Malone, N. Y.: I do not claim the mode of operating the saws as described and claimed in the patent of Cyrus Avery, dated June 17th 1855.

But I claim giving the saws, U U, a lateral vibrating motion, while the saw frame or gate, C, is being operated by means of the rods, B S, attached to sliding frame, P, in combination with arms, I T, levers, l n, and racks, o p, when constructed, arranged, and operated substantially as shown and described.

STRIKING UNBURNT BRICK—Marinus P. Crapo, of Bucksport, Cal.: I claim operating the follower, D, and striker, G, by means of mechanism constructed and arranged as described.

SELF-SETTING TAIL-BLOCK FOR SAW MILLS—Joel Dawson, of Barnesville, Ohio: I claim the bent or curved lever, E, with pawl, D', secured to it, adjustable block, F, with screw, e, and oblique board, H, attached, and the sliding block, C, with rack, c, secured to it, the above parts being arranged and operated as shown, for the purpose set forth.

FIRE BACKS FOR FIRE-PLACES—Samuel M. Echols, of Lafayette, Ala.: I disclaim hot air chambers in fire-places, and soapstone and sand blocks in the back of the chimney, as claimed by Sarah Hammond in her patent of 1839.

But I claim the arrangement in the chimney before the back plate, a, of the removable double cylinder and plane fire-back, B, as and for the purposes set forth.

DOOR KNOB—Henry H. Elwell, of Meriden, Conn.: I do not claim the spindle divided parallel with its sides, as this is very old, nor the expanding of the same by means of a taper slot and pointed screw, as this is covered by letters patent granted to Nathan Benham in April, 1856.

But I claim dividing the spindle diagonally and providing a screw hole, b, in one end of each of its sections, c c, at right angles to the dividon line, substantially as and for the purpose set forth.

STRAW CUTTERS—Cotton Foss, of Painesville, O.: I claim the stationary arm, d, friction roller, e, and inclined track, f, combined and operating as specified and for the purpose set forth.

CUTTING DEVICE FOR HARVESTERS—Carlos W. Glover, of Roxbury, Conn.: I claim the oscillating cutters, E, placed within the fingers, B, and used in connection with the sickle, C, substantially as described for the purpose set forth.

STONE DRESSING MACHINE—A. M. George, of New York City: I do not claim separately the toggles, G, with cutters, I, attached, for they have been previously used.

But I claim as an improvement on the stone dressing machine of Nichols & George patented December 18th 1855, the toggles, G, with the rollers, J, and knives or cutters, I, attached in combination with the rotating shafts, K K, with the adjustable arms, L, upon them, the parts being arranged and operating substantially as shown for the purpose specified.

RAILROAD CAR WHEELS—A. C. Ketchum, of New York City: I claim connecting the hub and rim of the wheel by fitting a flange, D, attached to the hub, within a flange, B, attached to the rim, providing the said flange, D, with a shoulder, b, and groove, c, and applying a divided clamping ring, E, to the said groove, c, substantially as described.

COLLODION FOR PHOTOGRAPHIC PICTURES—Victor M. Griswold, of Lancaster, Ohio: I claim the addition of albumen to collodion in the manner and for the purpose specified.

SLAUGHTERING HOGS—Thomas J. Godman, of Madison, Ind.: I claim the horizontal revolving wheel or frame provided with hooks o, its periphery arranged at or near the scalding bench, and used to transport and transfer the hogs from the bench (on which they are deprived of their hair by pulling and shaving) to the scraper down, gutter, washer out of the inside and off bearers, which hang them in the drying room, holding the hogs convenient to each laborer in succession, a proper time for him to perform his allotted or respective portion of the slaughtering process.

FRAMES OF MOWING AND REAPING MACHINES—Moses G. Hubbard, of Penn Yan, N. Y.: I claim the cylindrical or conical formed metallic frame as a support for the running gear and finger bar, when constructed, arranged and combined therewith in the manner and for the purposes set forth.

Also in combination with said cylindrical or conical metallic frame, a, the step or brace frame, g'', in the manner and for the purposes set forth.

MACHINE FOR COMPOSING AND DISTRIBUTING TYPE—Julius J. Koenig, of Chicago, Ill.: I claim the arrangement of parts substantially as described, for the purpose of composing and distributing type, as specified.

TINTING PHOTOGRAPHIC PICTURES—Giles Langdell and Marcus A. Root, both of Philadelphia, Pa.: We claim the application of coloring substances or matter to to photographic impressions or pictures upon glass or metal or other material in the form and manner described.

STRAW CUTTER—Oren Moses, of Malone, N. Y.: I claim constructing the auxiliary cylinder of an iron skeleton, combined with fillings, g g, of wood, horn, or other suitable material, when the shaft of said cylinder is secured to its driving pinion in such a manner that the relative position of the cutting cylinder and the auxiliary cylinder can be so adjusted as to cause the edges of the knives, d d, in the former to act equally and uniformly upon every portion of the face of each of the fillings in the latter cylinder, for the purpose of preventing the formation of deep channels in said fillings, substantially as set forth.

SASH LOCK—Lucius Paige, of Cavendish, Vt.: I do not claim either of the parts composing said lock, when they are separately considered.

But I claim the combination and arrangement of the weighted arm, D, the rack, C, the sectoral gear or pinion, E, the stopping arm, F, and the stop shoulder, H, as applied to the bolt and within the case thereof, and so as to operate together and actuate the bolt, substantially in manner as specified.

PLOWS—John Rich, of Kingsbury, N. Y.: I claim the sockets, i and k, when arranged and combined with the body of the plow, in the manner and for the purposes specified.

PLEASURE CARRIAGE—C. W. Saladie, of Columbus, Ohio: I claim the longitudinal braces, A, in combination with the double circle, B, by which means the third wheel is firmly connected to the hind axle, and wheels, in the manner and for the purpose set forth.

MILL STONES—J. G. Siemers, of St. Louis, Mo.: I do not claim any arrangement of the running stone, or its spindle, by which an elastic bearing of said running stone against the stationary stone, is produced.

But I claim supporting the stationary stone upon a series of elastic and readily adjustable bearings, when the said stationary stone is combined with a running stone which rests upon a series of elastic and readily adjustable bearings which are combined therewith, and with the spindle or shaft of the same, in such a manner that the faces of said stationary and running stones are enabled to mutually self-adjust themselves to each other, and are also enabled to be adjusted substantially as set forth.

FIRE-ARMS—George H. Soule, of Jersey City, N. J.: I claim the use of the facings of copper, or other equivalent tough metal, less oxydizable than steel or iron, by the action of the heat and sulphur gases caused by the explosion of the powder, in combination with the breech piece and charging chamber, substantially for the purposes and mode of application, as set forth.

SEAMLESS METAL TUBES—J. J. Speed, Jr., and J. A. Bailey, of Detroit, Mich.: We do not claim an automatic intermittent feed of the work; nor do we claim the manufacture of seamless metal tubing on a mandrel by action of a triple die pressure irrespective of the construction, arrangement, and operation of the dies; nor yet, of itself, a compressive action of two dies on the article to be formed under a stationary condition of the latter and a diagonal arrangement of the hammering dies to it, as such has been used in thimble making machines.

But we claim in the manufacture of seamless metal pipes or tubing, the three encircling and radially hammering or pressure dies, H J K, when arranged relatively to each other and operating together on the tubular ingot while stationary, as specified, and in combination with the intermittent feed to the ingot or partially formed tube on or over the mandrel, alternate with the compressive action of the dies, as shown and described.

THRASHING AND CLEANING GRAIN IN THE FIELD—G. W. Swift, of Oxford, Miss.: I claim the pinions, I H, and pulleys, J K L, in combination with the traveling wheels, the double axles, D E, and the pivoting attachment, w f, substantially arranged and operating as described, for giving the driving pulley, L, an accelerated rotation from the rotation of the traveling wheels; either by the forward motion of the machine, or by a circular motion about its attachment, as set forth.

CATTLE STALL—Hiram Tarbox, 2nd, of Tremont, N. Y.: I claim having attached or supported an apron, or its equivalent, whereby the excrement is prevented from dirtying the animal, and also protecting litter or bed, all for the purpose described and set forth.

DETACHABLE SHAFT COUPLING—Peter Teal, of Philadelphia, Pa.: I do not claim the split sleeve for coupling shafts, whether constructed with single or double conical surfaces, as that is well known.

But I claim the plate or ring, D, constructed and arranged as described, for the double purpose of operating the coupling of the shafts, and also for releasing the coupling.

MOP HEADS—Hiram Thompson and R. Q. Tuson, of Lebanon, N. H.: We claim firmly securing the binder, f, in any desired position, by the joint action of the cam lever, h, and the spring, d, when the former is combined with the binder ring, and the latter is combined with the mop handle, substantially as set forth.

WASHING MACHINE—H. H. Torrey, of Buffalo Grove, Ill.: I do not claim the tub, A, and disk, E, separately or in themselves considered.

I claim the rotating reciprocating disk, E, placed within the tub, A, and upon an arbor or shaft, B, when said disk is provided with pins or pegs, d', on its under surface, and the bottom of the tub with radial rubbers, b, substantially as shown for the purpose specified.

MOWING MACHINES—J. W. Thompson, of Greenfield, Mass.: I claim connecting the cutter plate box, o n, to the after ends of free y vibrating arms, K l, in combination with the rectangular frame, r, and the inwardly projecting and sustaining arm, q, when the said parts, together with the cutter plates and their gearing are arranged in relation to the main wheel, A, substantially in the manner set forth.

CAR COUPLING—J. B. Witherbee, of Upton, Mass.: I do not claim the employment of a sliding retracter for opening nipper levers, C C, moving on a stationary fulcrum.

But I claim applying the sliding retracter and the curved grasper together, so that the fulcrum of the latter shall be movable with the retracter, and the whole be made to operate in other respects, substantially as specified.

COMPOSING STICK—O. F. Grover, of Middletown, Ct. I claim the application to the composing stick of the guide, C, to prevent the slide B, and the bed A, from separating while adjusting the composing stick and the clasp D, to secure and hold the slide B, in its place on A, when adjusted as described, using for that purpose the aforesaid guide, C, and the clasp D, or any other substantially the same, and which will produce the desired effect.

TIME KEEPERS—J. C. Briggs, of Concord, N. H.: I claim the application of friction to conical or rotary pendulums to keep them revolving, very nearly, in any desired circle substantially in the manner and for the purposes described.

CHARGING CANNON—Josiah Dodge, of Dummerston, Vt.: I claim the arrangements of the springs, 7 and 14, guide pin 8, openings 9, and forked lever 6, for the double purpose of revolving and guiding the tubing on the periphery of the wheel to the end of the cannon barrel, as mentioned.

CENTROLINEADS—W. J. von Kammerhueber, of Washington, D.C.: I claim the combined T-square and centrolinead, constructed as described in connection with the circular arcs of different diameters, and of any suitable material provided on their ends with pins, or their equivalent, to secure them to the drawing board, when used to guide the centrolinead, as described and set forth.

VEGETABLE DYE STUFF—Fred. E. Schmidt, of New York City: I am aware that Buckberry juice, without further preparations has been used as a dye stuff, of which the colors are known to fade out very soon, and I do not claim the use generally.

I claim the treatment described of the juice previous to its use for dyeing, to produce permanent and durable colors.

FENDERS—J. W. Truslow, of Lewisburg, Va.: I claim the hinged-folded screen or fender within the recess in the jambs, in combination with the spring in rear of the screen, and the sliding panel, in front of the same, in the manner set forth.

FILTERING MEDIUM—Wm. Wickersham, of Boston, Mass.: I claim, first, the use of a disk in water filters, formed of flattened wire, or narrow strips of metal grooved transversely by either milling or engraving, in such a manner that when said strips are formed or wound into a disk, said grooves will form apertures for the water or other fluids to pass through said disk in the process of filtering, as described.

Second, the method of making the filter disk less liable to injury and more firm, by inserting pins from the edge to, or nearly to the center, through the different layers of metallic strips, of which it is made, to hold them in their places; this method of fastening the disk together, I claim only in combination with the spiral filter disk, all substantially as described.

LARD LAMPS—J. S. Senseny, assignor to himself and G. H. Merklein, of Chambersburg, Pa.: I do not claim a self-heating lamp simply, as this has been done by C. Wilhelm, in his patent of April 6, 1842, and by J. Smith and J. Stonecifer, in their patent of Aug. 8, 1854.

Nor do I claim, simply, the use of a spicket for regulating a flow of the material to the lamp, as this is done by C. Leidhof, in his patent of July 27, 1852.

But I claim the arrangement and construction of a lamp as described and set forth.

RE-ISSUES.

SEWING MACHINES—P. Seymour, of East Bloomfield, N. Y.: I claim combining the stirring rod, or bar, H, with the dropping bar or vibrating bar, m m, and in combination therewith, the gauge rod, c c, with its index for regulating the amount of seed to be dropped, in the manner described.

Also the lever, with a movable pin or fulcrum operated by the zig-zag motion, for working the vibrating rods, and regulating the quantity per acre to be sown by increasing or decreasing the motion of the vibrating rod, as set forth.

SEIN NEEDLES—H. M. Glines, assignor to J. M. Stanton, of Manchester, assignor to P. Bennet, J. Kendrick, and L. A. Cook, of Providence, R. I.: I claim imparting to the needle and to the arm, or equivalent thereto, the motions substantially such as described, for carrying the twine, cord, or thread, into the eye of the needle, around the tongue and then out of the eye, substantially as described, and by the means specified, or equivalents therefor.

COTTON GINS—D. G. Olmstead, of Vicksburg, Miss., assignor of R. A. L. McCurdy, of Sabine Parish, La.: I claim the revolving screen situated in the hopper, or roll box, arranged and operating substantially in the manner and for the purpose set forth.

In combination with the revolving screen, I also claim the spirally winged shaft, revolving within said screen, and operating substantially in the manner and for the purpose specified.

ADDITIONAL IMPROVEMENT.

WIND PUMP—J. W. Goodwin and M. C. Hawkins, of Edinborough, Pa.: We claim the constructing of the wind wheel, so that the shaft, C C, will turn with it, together with the manner of braking or stopping the wheel when the water cistern is filled with water, by means of the hydrostatic bellows, H, and the lever, K X', and the brake blocks, O O, constructed in the manner described.

Second, the construction of the friction wheel, D, in combination with the friction wheel, E, and the brake, K, constructed in the manner described or any other substantially the same, and which will produce the same results.

DESIGNS.

BOX STOVE PLATE—Winslow Ames, of Nashua, N. H.

McCormick's Patent Extension.

A most pertinacious attempt to revive an old expired patent of Mr. McCormick, for a harvester, has been made at Washington during the present session of Congress, and, we are sorry to say, is still adhered to. The whole subject is very clearly set forth in the following letter from a correspondent of the *New York Herald*:—

In 1834 a patent was granted to Mr. McCormick for a reaping machine, for fourteen years. As the law then stood, all that was required of an applicant for a patent was an oath that he was the inventor of it, thus doing away with all investigation into the subject, as the Board of Commissioners could not go behind the oath of the person claiming the patent. The patent issued in 1834, however, was found to be practically useless, and on the 31st of January, 1845, McCormick obtained another patent for another improvement. These patents had each fourteen years to run, and expiring in 1848 and 1859, respectively. In consequence of these improvements the machine has become valuable. In 1848, McCormick made application to the Board of Extension in the Patent Office for a renewal of his first patent, which was about expiring. Obediah Hussey contested McCormick's right to priority of invention, and testimony was ordered to be taken on this point.

The result was that the majority of the Board of Extension, consisting of Hon. James Buchanan and the Solicitor of the Treasury, Mr. Gillette, refused to grant McCormick's application—Mr. Burke, the other member of the Board, dissenting. The patent of 1834 accordingly expired by its own limitation. During the investigation the principal examiner of the Patent Office made a report in which he asserted that not only was the principle of the machine patented in 1834 found in Hussey's patent, but that there were numerous patents long prior, in point of date, which contained the features claimed by McCormick's. From all these circumstances, which appear in the official record, it is evident that McCormick owed his first patent entirely to the looseness of the law then existing, which issued a patent to any claimant as a matter of right, upon his own affidavit, without further examination.

The patent having thus ceased to exist eight years ago, and the right to use it and improve upon it having vested in the public, the proposition now is to revive it, and thus re-establish the monopoly.

None of McCormick's advocates pretend that the machine of 1834 was either efficient, useful, or practical. What is sought is to revive the monopoly of this affair, so as to prevent any person improving on it in any respect. McCormick himself improved on it, as has been seen, and the improvements for which he holds patents are valuable. But the idea is to regain into his custody the crude principle, and thus prevent others from improving on it also, for the benefit of the country at large. But even this scheme is rendered still more odious by the more than uncertainty which exists as to Mr. McCormick's priority of discovery.

The practice of special legislation is open to the most serious objection, and a very strong case must be advanced to warrant it. In the case of the McCormick application, we can discover no good reason why it should be granted. Not only has he two unexpired patents for all that is valuable in his machine, but in reality he will have enjoyed, supposing neither of his last patents will be renewed, twenty-seven years protection from the government—a period, surely, of sufficient duration to satisfy the desires of the most avaricious. There is no pretence that Mr. McCormick has not become rich by his invention, and it is time, now that his interests have been cared for thus liberally, to see that justice is also done to the public at large.

No one can deny that the improvements which Mr. McCormick has made in his machine have been of the highest benefit to the agriculturists of this country and of the Old World. He deserves to be, as he has been richly compensated. The simple question which now arises is, whether, after having done ample justice to him, he is to be empowered to do injustice to others. He has invented improvements on a crude principle, and patents have been issued therefor, which have years yet to run, and we trust that they will continue profitable ones to him. But is Mr. McCormick to have, in addition, the right given him of crushing out all other inventive genius but his own, by reviving a monopoly in the incomplete machine which he has already exercised for fourteen years? He has benefitted himself and others by discovering improvements in the principle of that machine, and simple justice requires that others should not longer be debarred from the discovery and application of improvements which may, perhaps, be of even greater value than those now in use, and for which he enjoys a monopoly from the government which no one seeks to disturb.

McCormick's bill has been already twice rejected by the present Senate, but the *Herald* says it will be tried again. Its passage would be disgraceful. This back-action legislation, should never receive any countenance in Congress.

A great Railroad Project.

Macdonald Stephenson, in Herepath's *Railway Journal*, proposes the construction of a railroad from London to Lahore, in the East Indies, with but two breaks—one at the Straits of Dover, and the other at the Dardanelles. The entire length of the line will be about 3,405 miles, and will cost about $170,000,000. If carried out, as in all likelihood it ultimately will be—the distance between London and India will be reduced to a ten day's journey.

Heat.—During the past week the thermometer stood for several hours at 99° in the shade in this city, one degree above blood heat.

Engraving by Light and Electricity.

Soon after the discovery of photography, it was thought that if it could be applied to assist the engraver in transferring pictures to plates, to be engraved, an important object would be obtained. Many men of science, and artists, devoted themselves to accomplish this object, and among the most successful in this field of research, has been the eminent M. Niepce de St. Victor, of Paris. Another distinguished personage is Herr Paul Pretsch, manager of the imperial printing office in Vienna, who obtained the Great Exhibition prize medal, at the World's Fair, in 1851, for his photographs. From the London *Engineer* we learn that he has recently delivered a lecture before the "Society of Arts," on this subject, in which we find much interesting information.

The following is his own description of the process which was patented on the 9th of November last year.

"My invention consists in adapting the photographic process to the purpose of obtaining a raised or sunk design on a glass or other suitable plate covered with glutinous substances, mixed with photographic materials, which design can then be copied by the electrotype process, so as to procure plates suitable for printing purposes. The operator first coats a glass plate with a gelatinous or glutinous solution, suitably prepared with chemical ingredients, sensitive to light, as follows:—One part of clear glue is soaked in about ten parts of distilled water, but the quantity of water depends upon the strength of the glue and the state of the atmosphere. Meanwhile there are prepared three different solutions, viz., a very strong solution of bichromate of potass, a solution of nitrate of silver, and a weak solution of iodide of potassium. The glue is dissolved by heat, and a small quantity of it is added to each of the two solutions of silver and iodide. The remaining greater portion of the glue is kept warm, the solution of bichromate of potass added, and well mixed. After which the small portion of the glue with silver is added, and also mixed well, and allowed about ten minutes' time for combining. Finally, the small portion of the glue with the iodide is added, the whole mixture strained, and it is then ready to be poured on the plates of glass or other suitable material. When dry, the coated plate is ready for exposure. The photographic picture, the drawing, print, or other subject to be copied, being laid on the prepared coated surface, they are to be placed together in a photographic copying frame, and exposed to the influence of the light. After a sufficient exposure, which is exceedingly variable, according to the intensity of the light, the plate is taken out from the copying frame, when it will be found to exhibit a faint picture on the smooth surface of the sensitive coating. It is then washed with water, or a solution of borax, or of carbonate of soda, as may be necessary. The whole image comes out in relief with all its details, and, when properly done, with all its brilliancy.

If the original is a photograph, chalk, sepia, or Indian ink drawing, the copy represents the different tints in grain; if in lines, the copy will reproduce the lines.

When sufficiently developed, it must be washed with spirits of wine. The surplus moisture is removed, and the plate is covered with a mixture of copal varnish diluted with spirits of turpentine. After some time, and before becoming quite dry, the superfluous varnish must be removed by oil of turpentine, and the plate immersed in a very weak solution of tannin or other astringent liquid. During this part of the process the plate must be carefully watched, and removed as soon as the picture or design is considered sufficiently raised; it is then washed in water and dried. In this state the plate is ready to be copied. This may be effected by the customary methods of rendering the coating conducting, and placing it in the electrotype apparatus, or by making a mold from the coated plate which, being subjected to the electrotype process, will afford the required plates for printing, or the copying may be done by stereotype or other like process. To produce a *sunk* design on the prepared plates, I proceed as before, but after washing with the spirit of wine the plate must be dried, and, in due time, the picture or design will appear sunk like an engraved plate. The printing plates are produced as before described.

By applying printing ink to the coating of the plate prepared as above described, and taking the impression upon paper laid thereon, a transfer from it may be made to zinc or stone. The electrotype process may be used for multiplying the plates when made.

I am unable to lay down a more exact method of treatment, as much depends on the nature of each case, the state of the atmosphere the quality of the glue or gelatine used, &c.

Instead of the iodide of potassium, the bromide of ammonium or iodide of ammonium may be employed, as they shorten the time of exposure. In some cases the camera may be employed with great advantage, especially, also, if we use the above-described coating as a ground or basis upon which we may use albumen or collodion for the purpose of getting a picture in a shorter time, which picture is then used like the original in the copying-frame.

Although much has been done by this method, and many kinds of glue, gelatine, and similar materials, have been tried, the mode above described has been found most useful. Some improvement may be made in future, but the principles of the method are founded on sound bases, and will experience, I think, an extensive application.

Thus photography may be advanced a step further, and made to become the handmaid of the graphic arts. This beautiful art is thus rendered far more practically and enduringly valuable than it has hitherto been. The impressions from the photo-galvanographic plates exhibit a tint much superior to mezzotinto or aquatinto, whilst, whatever touches appear in nature, are reproduced at the printing press with a fidelity which no artistic labor can rival, and which, in many cases, the human hand would never engrave. If an artist's original design is required to be produced, it appears in print without the alteration of a single line or touch, and on any scale.

(For the Scientific American.)

The Sun.—No. 4.

[Continued from page 338.]

Many opinions have been advanced respecting the nature of the solar spots. Some have supposed that they are small opake planets revolving round the sun very near to his surface, and thus transiting his disk as dark spots; some have regarded them to be *scoira* floating in the molten surface of the solar orb; and others have conjectured that they may be bituminous matter ejected from volcanoes in the interior solid nucleus of the sun. The futility of these opinions becomes at once apparent when we consider the phenomena of the spots themselves. Some foolish and vague ideas of the solar orb have been advanced from time to time, which have had considerable weight in illiterate circles, such as, that he is the seat of the ever-burning infernal regions, which the foolishness of the world has pictured in imagination.

It is pretty well conceded by physicists, at present, that the globe of the sun is a dark opake body, enveloped in a cloudy reflecting atmosphere, and above this by the self-luminous photosphere. Accordingly, the luminous area is not the surface of the body of the sun itself, but that of a surrounding gaseous substance. The spots on the sun are nothing more than openings in his envelope of luminous and cloudy strata, exposing his dark body to view. The dark nuclei of the spots are portions of the surface of the non-luminous globe of the sun, and their penumbral fringes are the interior cloudy stratum, which is strongly illuminated by the enveloping photosphere, while the globe of the sun is screened from the luminous medium by the cloudy atmosphere. These openings are effected, probably, by powerful, perhaps upward, currents of the solar atmosphere, which represent immense physical agitations that are beyond comparison with terrestrial phenomena. What would the agitations of our insignificant atmosphere be beside those which would cause such displacements of the enveloping solar strata, whose thickness can be no less than thousands of miles, over areas more than ten times that of the earth's surface, in so short periods of time? Both of the enveloping strata are temporarily removed by these agitations, but a much larger area of the upper and probably the rarer one.

These conclusions respecting the nature of the solar spots are strengthened by the apparent sharpness of the outlines of the penumbra, both on its interior edge, where it meets the nucleus and its exterior marking the borders of the photosphere. Moreover, when a spot is approaching the western limb of the sun the eastern portion of the penumbra contracts and disappears, in the first place; next, the nucleus becomes narrowed laterally to a mere line, and then becomes invisible; while the western portion of the penumbra remains a little time after the vanishing of the central spot. This shows that the spots are depressions in the luminous surface of the sun, otherwise the western borders of the penumbra would disappear first, and so on. On their re-appearing on the eastern limb of the sun these phenomena are exactly reversed—the eastern border of the penumbra's appearing first. It has also been stated that a spot has been observed to appear like a notch in the limb of the sun, when passing from one of his hemispheres to the other. The spots, however, usually disappear by foreshortening before arriving at the limb of the sun on his western side, and do not appear on his eastern border until somewhat advanced in his visible hemisphere. They cannot be followed more than from twelve to thirteen days, the smaller ones being invisible at greater distances from the margin, although they are in the visible hemisphere more than thirteen and a-half days.—The occurrence of the spots in zones parallel with the solar equator, and their frequent recurrence over nearly the identical portions of his surface, seem to denote that their phenomena depend, at least in part, on the rotation of the sun—as do the belts of some of the planets and the trade wind currents of the earth on the rotary motions of these bodies—as well as on local causes, which we are equally unable to trace out.

STILLMAN MASTERMAN.

(For the Scientific American.)

Electro-Chemical Baths.

In the SCIENTIFIC AMERICAN of July 5th, an article appeared under the caption of "Electro-Chemical Baths," which was intended to be a refutation of an article written by myself on the Electro-Chemical Baths, published in the same paper on May 31st. I will offer a few brief remarks on the article above alluded to.

I quote from the article:—"In considering (says the writer) the surface of the plate of copper in comparison with that of the tub, it requires no great intelligence to perceive that the galvanometer should be exceedingly sensitive to appreciate the current passing through it from the copper plate."

I will now observe that I will take a sheet of copper of precisely the same superficies as that of the bath tub, and, folding it loosely in three or four layers, will place that under the experimenter's feet in the bath tub, and when connected with the galvanometer, as in the experiment published on 31st May, no more effect will be produced on the galvanometer than if the sheet of copper had been but four inches square, the needle indicating not the slightest current. In trying this experiment, however, care must be taken that the sheet of copper under the feet in no part comes in contact, or by approximation to contact with the copper lining of the bath tub.

In regard to the plausible objection of the copper vase spoken of, a few words will explain that. In the first place, I would observe that all metals in solution have a strong affinity for any metal in a state of solidity. In the case of the vase, the metal in solution was electro-positive compared with the vase; under this circumstance the vase would become coated with silver, even if no battery current were applied to it at all. This any one can try by taking a tumbler of silver solution, and dropping into it a piece of polished brass, which will soon become beautifully plated with silver.

The readers of the SCIENTIFIC AMERICAN will find an article corroborative of what is here stated in the same 5th of July number, under the caption of "Silvering Metallic Articles," to which I refer them.

Again, I would observe that wherever a current of electricity is passing there is also a wave and an aura accompanying it. The wave extends twelve inches from the line of motion, the aura much further.

Such being the case, the electric aura alone, although too feeble to affect the most delicate galvanometer, is sufficient to effect the electro-plating of the vase with facility.

Then again, there is a vast difference between the silver solution in the vase and the water in the bath tub. The solution in the vase being a metallic solution is incomparably a better conductor of electricity than the water in the bath tub.

The above are facts which any one can prove, not mere allegations to raise a cloud of dust and escape in the smoke.

SAMUEL B. SMITH,
New York, 1856. Electro-Magnetist.

To Inventors.

An improvement wanted in Piano Key Boards. Who will invent it? To me, the present form of key board appears the most inconvenient contrivance that could be produced, and beyond doubt is a great hindrance to the learner, especially when playing in keys with a great many flats or sharps. I never look at a piano but I am reminded of a rack; and when I play on one it seems like putting my fingers on and between the teeth.

VALLO.

Silvering Glass.

The following is a recipe for silvering glass: Take 1 oz. pure nitrate of silver, 1 oz. aqua ammonia, 2 oz. distilled water. Mix and add 2 oz. of pure alcohol, 2 oz. of distilled water, 1-4 oz. of grape sugar. The above is placed in the article to be silvered (a bottle, for instance,) and kept at a temperature of 160° till the silvering is effected. The purity of the chemicals influence the result, in fact, all depend upon that.

JOS. FITZPATRICK.

[Those beautiful silverized glass globes seen in the windows of many stores are produced by the above described process. The information communicated by our correspondent is useful and interesting.

Burning of Steamboats.

St. Louis seems to be a very unfortunate place for steamboats. There was a great destruction of boats in that city last spring, at the opening of navigation, and on the 2nd inst. no less than six were burned to the water's edge in the space of three-quarters of an hour. The fire was first noticed on board the steamer *St. Clair*, and is supposed to have been the work of an incendiary. The flames were soon communicated to five other boats in the vicinity—all laid up for repairs or something else—and they were soon beyond the reach of rescue. Most of these boats were of no great value, but the total loss amounts to no less than $100,000, and there was no insurance whatever on the *Southerner*, the best of the number. Now it appears to us that there must be a great deal of carelessness, or bad arrangements, at St. Louis, to cause such accidents.

Important and Singular Patent Case.

On July 9th, before Judge Betts, U. S. Circuit Court, this city, a rather singular case was decided, the parties being Cyrus McCormick against Moses Jerome and others. On the 20th of April, 1855, an injunction was granted in the Circuit Court restraining the defendants, who are assignees of John H. Manny's Patent Reaping Machine for Pennsylvania, from making such machines, which are alleged to infringe McCormick's patent. The injunction was not issued until the 24th of June, 1856. The defendants refused to obey it. The Court decided that these facts made out a case of irregularity, which would take away the effect of the motion. This was a State writ of injunction. On its face it purported to prohibit certain acts going on in June, 1856; but it was granted on the assumption that these acts were being done in April, 1855. The writ should have been taken out within a reasonable time. If a term interpose it becomes obsolete, and must be renewed on proper proof. The injunction was set aside.

New Inventions.

Composition or Cement Roofs.

We have received a letter from J. K. Christopher. of Indianapolis, Ind., in which he states that the pitch cement described by us as a cheap roofing material on page 315 is not a good one; that in "one instance, when applied as roofing for a log cabin country store, it run through by the heat, upon the shelves, tarring the goods."

These statements convince us that the cement roof of the log cabin was not similar to the one described by us. It may have contained the same materials, but not the same component parts, nor could it have been put on in the same manner. Many good improvements have been condemned, at least for a period, by being inefficiently tested or blunderingly applied.

Mr. Christopher states that a cheap roofing cement—one that will stand fire and water—and which is not subject to expansion and contraction, has been used in New York State for twenty years. It is composed of the following ingredients:—India rubber, gum shellac and gutta percha, dissolved in mineral naphtha, also linseed oil, lime, plaster of Paris, yellow ocher, whiting, and litharge, and some vitrified sand, all mixed together. Placed on canvas, metal, or wood, he asserts that two coats of it is a permanent protection, and that it is elastic, and will not crack off.

He is certainly mistaken in asserting that this cement has been used in this State for 20 years. Gutta percha was then unknown; it is only about 10 years since we received the first piece sent to this city. The cement is a very good one, but it is not cheap, and four of the materials are combustible. The lime plaster of Paris, and whiting, are the hydrate, the sulphate, and carbonate of lime, and incombustible.

Five years ago we applied a cement composed of white lead paint, whiting, and dry white sand to a small tin roof that leaked like a seive; it soon became nearly as hard as stone, has never scaled off, and has kept the roof, since then, perfectly tight. It was put on about the consistency of thin putty.

Slaters' cement for stopping leaks around chimneys, is composed of linseed oil, whiting, ground glass, and some brick dust. It is a good cement for this purpose; also for closing the joints of stone steps to houses.

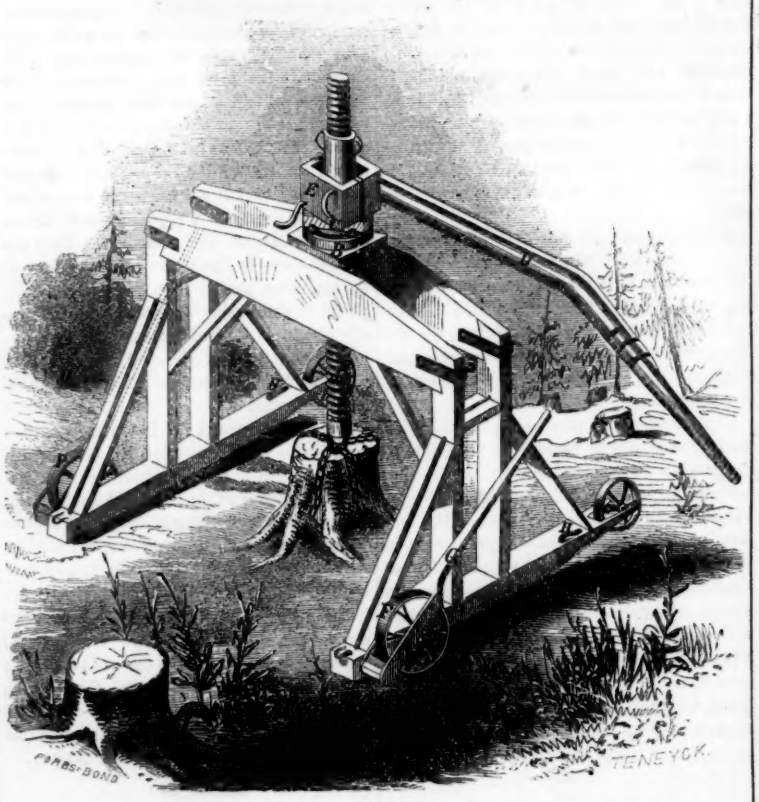
A patent was issued last week to H. Billngs, of Beardstown, Ill., for a new roonfig cement, composed of pitch, oil, shellac, and steatite powder. It appears to us that this will make a good, but rather expensive roofing cement.

A Steam Plow for the Prairies.

In the *Prairie Farmer*, Chicago, Ill., of the 10th inst., Bronson Murray proposes that a premium of $50,000 be raised by subscription of one hundred persons, paying $500 each, to be awarded for a perfected steam plow suited to farm use, and capable of performing the labor at an expense not greater than the average cost of performing the same work under the present system. He offers to be one of the hundred subscribers, and wishes the subscriptions secured to the Illinois State Agricultural Society, and the premium to be offered by it, under such rules as an Executive Committee may direct. He asserts that there is not a farmer who cultivates 500 acres of prairie land, but can well afford to unite in the proposed subscription. He is confident that the steam plow would long since have been invented, had the capital of mechanics been equal to their inventive genius. In this opinion we cordially agree with him. It would be a most inestimable boon to farmers on the prairies if they could plow their stubble lands quickly after the crops are removed. The benefit of the steam plow to them would be quick plowing,—doing as much by one plow in one day, as is now done by five or six with teams, which cannot be driven beyond a certain speed. When Mr. Murray came to the prairies fourteen years ago, there were no harvesting machines in use; but he felt confident they would soon be, and this determined him in settling in Illinois. His hopes have been realized regarding harvesting machines, and we trust they will also be realized respecting a prairie steam plow. Its working expenses may be as great as plowing by present modes, but if it does the work in less time, with fewer hands, (as we understand it,) farmers will be satisfied.

At a meeting of the Farmers' Club, held at the American Institute, this city, on the 9th inst., Judge Meigs read an account of an English farm locomotive of 16 horse power. It weighed 9 tuns, was stated to move easily over soft fields, and ascend pretty steep inclines. Its inventor had spent $50,000 in making experiments, and he was now satisfied with its performances. It draws a gang of plows with ease. Our friends in Illinois would like a steam plow of much less weight than 9 tuns; it is too heavy for general use, but no doubt smaller ones on the same principle can be constructed. We are not acquainted with its peculiarities; but, in our opinion, the common locomotive, with broad-faced wheels, is the principle on which to build a successful prairie steam plow.

IMPROVED STUMP PULLER.



Machine for Pulling Stumps.

The invention illustrated by our engraving, consists of a strong truss frame, having in its center a vertical screw, by means of which the stumps are raised. The frame is furnished with wheels, whereby the apparatus may be conveniently transported from place to place. There is a peculiar arrangement for preventing friction in the movements of the screw, which will shortly be explained.

A is the vertical screw, having a clevis at its lower end, to which the chains that encircle the stump are fastened. When the screw rises, the stump will be lifted vertically out of the ground. B is a nut plate resting on the cross frame; the nut plate, B, is grooved, and the grooves contain small balls. C is the nut, also, grooved similarly to B. In our engraving a portion of C is cut away, so as to exhibit the grooves. Attached to nut C, is a box, E, to which the levers, D, for turning the screw, A, are attached. When the nut, E, is turned so as to raise the screw, the latter will pull on the stump, and cause nut C to press on the balls; except for the interposition of the balls, nut C would press on plate B, and the friction would be very great. But the balls almost wholly prevent the friction, and allow the screw to be moved with comparative ease even when it is exercising tremendous force.

F are transport wheels attached to the lever, G. When the machine is in use, as shown in our cut, the levers are thrown up so as to allow the frame to rest on the ground. When wanted for transportation, the levers, G, are pressed down and fastened by buttons, H, which raises the frame from the ground and sustains it on the wheels.

It will be seen that this apparatus is extremely simple in its arrangement, easily moved about, and quickly applied. The only limit to its power is the length of the levers, and these may be readily changed to suit circumstances. We have seen a number of testimonials from persons who have had the invention in use. They speak of it, without exception, in the highest terms of praise.

For further information address the inventor, Mr. J. B. Creighton, Tiffin, Ohio. Patented April 15, 1856.

Converting Iron into Steel.

"Mr. Horace Vaughn, of Providence, R. I., claims to have discovered an expeditious and economical plan for hardening iron. He uses the following ingredients in relative proportions, viz.: bichromate of potash, 2 oz.; prussiate of potash, 14 oz.; chloride of sodium, 17 ozs. This compound, dried and pulverised, is sprinkled upon the iron while at a cherry red and the article to be hardened is then plunged into cold water. The advantages of this discovery are, the iron is hardened and tempered at the same time; the process is performed in much less time than by any known mode. Mr. V.'s discovery appears to be a most valuable one, and from the ease with which experiments may be made, it will undoubtedly claim the attention of iron workers."

The above paragraph we have seen in a number of our exchanges. It is simply a method to produce what is called *case-hardening*—steeling the surface of iron. There is but little that is new about it, and what is new does not appear to be required. The common method of case-hardening (which was described years ago in the SCIENTIFIC AMERICAN) consists in applying a thick paste of the prussiate of potash to the surface of the iron, and conducting the process as above described.

Water for the City of Brooklyn

The Common Council have, in a rather peculiar manner, formed a Company to supply that city with water, and have subscribed over a million of dollars for this purpose, in the name of the city. They are making arrangements for commencing operations, and have appointed James Kirkwood, Esq., Chief Engineer, and Samuel McElroy, Assistant. Both of these gentlemen are perfectly qualified by ability and experience for their duties. Mr. Kirkwood has been engaged in the New York Croton Water Department, and Mr. McElroy in the Albany Water Works.

Every city should have a good supply of water, and the sooner Brooklyn supplies herself the better for the health and prosperity of her people. We have always thought, and think so still, that the best method of obtaining the cheapest and most certain supply of water to Brooklyn would be by a large tube laid through the East River, from the Croton of New York.

Improvement in Window Frames.

By John Casey, N.Y. City.—The object of this improvement is to afford a ready means of removing window sashes from their frames, so that the glasses may be conveniently cleaned, repaired, etc. This is done by making the stile, on one side of the frame, movable, as will be understood by reference to the annexed engraving.

Fig. 1

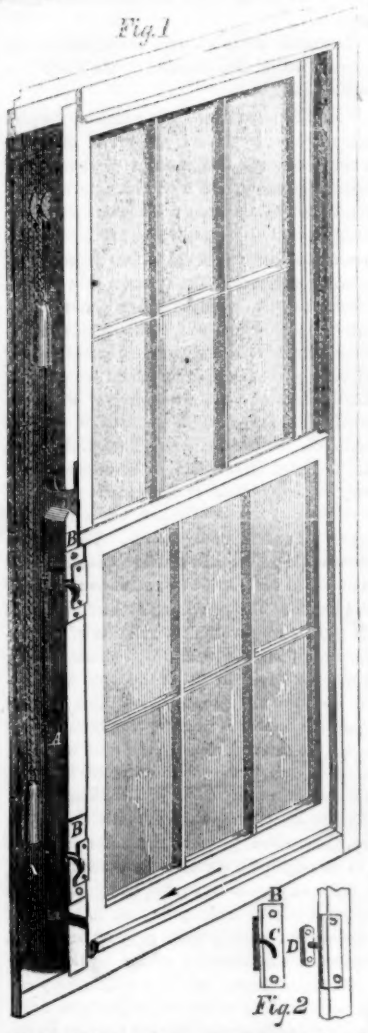


Fig. 2

Both window sashes are constructed and hung with weights in the usual manner. One portion of the stile, A, is made movable; its ends are furnished with metallic plates, B B', in which curved slots, C, are cut. Button headed pins, D, attached to the frame, fit the slots, C. See fig. 2.

When it is desired to remove the lower sash, it is raised a little so as to come opposite to the stile, and then moved laterally in the direction of the arrow. By this pressure the stile piece, A, is caused to fall in and move upwards, so that the sash may be removed. The upper sash can be lowered and removed in the same manner. The stile piece is guided by means of the slotted plates, C, and pin, D. When the window sash is restored to its place, the stile piece, A, falls down, by its own gravity, to its original position.

This improvement may be applied to all window frames in use, as well as to new ones. The expense is quite trifling. It permits the removal of the sashes with perfect convenience, and causes no change in the external appearance of the window frame, is quite simple, not likely to get out of order, etc. Apply to Mr. Phineas Smith, 390 Broadway, for further information. Patented June 4, 1866.

Death of Prof. Locke.

This eminent mechanician and man of science, died at Cincinnati on the 16th inst. He was a graduate of Yale College, and was once a surgeon in the Navy, and was distinguished as an amateur for great skill in making fine machinery.

Scientific American.

NEW-YORK, JULY 26, 1856.

The Woodworth Patent Extension.

The defeat of McCormick, in his absurd attempt to induce Congress to permit his old expired patent to be re-animated, gives us some reason to hope that the Planing Machine speculators will meet with a similar rebuff. But they are determined not to be defeated, and are still laboring with great vigor, to carry through their gigantic scheme.

From a petition to Congress, signed by mechanics of Massachusetts, in remonstrance to the proposed extension, we learn that a large fund has been raised to pay for procuring the extension, and that almost any amount of money is in readiness, to be used when wanted. The funds are raised by means of what may be called "forced loans," from those who use the machines. Such individuals are invited to contribute, and a written agreement is made, that, in consideration of such contribution, they shall have a chance at the spoils, if obtained. Annexed is a copy of one of the agreements, the name and locality of the contributor being purposely omitted:

Whereas, Letters Patent for a Planing Machine were heretofore granted to William Woodworth, now deceased, which were extended by the Commissioner of Patents, and subsequently by Act of Congress, in favor of William W. Woodworth, Administrator of said Patentee, and which Letters Patent having been surrendered by said Administrator, for a defective specification, new Letters Patent were issued to said Administrator, for said invention, upon an amended specification thereof, which will expire on the 27th day of Dec., 1853.

And, whereas, an application was made by said Administrator to the 31st Congress of the United States, for an act further to extend the said Patent, and a bill was reported in favor thereof in the House of Representatives, in said Congress, and thereafter ordered to lie upon the table. And, whereas, said application is about to be renewed before the Congress at its next session, and the undersigned now having an interest as joint assignee, within the following territory: * * * County, Mass., and being desirous of holding such interest in said Patent, after the same may be further extended; Therefore these premises witness that the undersigned agrees to pay the said William W. Woodworth, or his lawful attorney, the sum of twenty-five hundred dollars, as and for his fair proportion of the expenses which said Woodworth, Administrator, as aforesaid, has incurred, and may hereafter incur, in procuring such act, so reported as aforesaid, to be passed by Congress, for the further extension of said Patent; it being expressly understood that the undersigned shall have the exclusive refusal, within the territory aforesaid of a renewal of his license to use said Patent on the same terms as is in accordance with said reported bill, hereto offered, or to purchase the exclusive right to said Patent, if extended within said territory, on such reasonable terms as may be agreed upon by said Woodworth, or his attorney, and myself.

In witness whereof the said parties have set their hands and seals this seventh day of March, 1856.

(Witness) * * * * * *

The petitioners ask Congress to refuse the extension for the following reasons:—

1. It will inflict an irreparable injury upon the vast majority of your constituents throughout the country, without any justification.

2. It will benefit nobody having any title to the benefaction of Congress, but it will further reward the unscrupulous efforts of speculators and their tools who have made this patent a by-word and curse in most of our National Courts for the last ten years.

3. It will strongly tend to bring our whole patent system into the just contempt of the people, as oppressive and unjust.

4. It cannot be said with truth that the inventor or his heirs, have not already received an adequate reward; or that the consumers of wrought lumber have not already paid an *enormous* compensation for the invention.

5. It will be a deep stain on the character of Congress, and the country, if the means employed to procure this extension shall prove successful.

6. It will be far better in every sense, for Congress to make the heirs of William Woodworth, a direct grant of money, rather than renew this patent to be forthwith assigned to speculators to be by them enforced in the spirit of vindictive and oppressive monopoly against the mechanical industry of the country.

7. A very large fund has been raised by parties interested in this extension to *pay* for procuring it. Many agreements for that purpose have been made by or in behalf of the petitioner, which can be procured on call.

8. By making these agreements in all parts of the United States, a powerful and concentrated organization exists, whose object is, with their money and influence, by personal and combined efforts, to get an act of Congress in some form that will fasten this odious monopoly upon the community, that they may thereby enrich themselves, contrary to the spirit and intent of the patent system.

A third extension of this patent can produce nothing but injury and mischief in the community; and it can never secure the approval and acquiescence of the people for it will be unjust; and the undersigned confidently hope it will not be done.

Reciprocity in Patents.

Doctor Chaffee, a member of the Committee on Patents, has lately reported a bill to the House of Representatives, which provides for a very general reduction of fees payable by foreigners who desire to take out American patents. The proposed enactment is as follows:—

Be it enacted, &c., That when the President of the United States shall receive satisfactory evidence that provision has been made by law in any foreign country, province, or colony that the citizens of the United States shall be secured the exclusive right in their respective discoveries in such country, province, or colony, upon the same terms as the citizens of such country, province, or colony he shall thereupon issue his proclamation declaring that citizens of such country, province, or colony as shall have made the above named provision, shall be admitted to secure the exclusive right to their respective discoveries in the United States upon the same terms as citizens of the United States."

Under such a law the subjects of Great Britain, France, and almost every other government in christendom would be immediately enabled to secure patents in this country on the same terms as our own citizens. It is true that the charges of the British government are much larger than those of the United States. But England makes no distinction as to nationality. She grants patents to Americans on the same terms that she does to her own people; so do nearly all governments. except Canada. She, however, refuses to grant patents to any but her resident subjects.

We have long advocated the liberalization of our patent laws in respect to foreigners, and are happy to learn that there is a fair prospect that the bill above quoted will become a law. The interests of the country and of home inventors will be greatly benefitted by the measure. With this change, our patent system will be well nigh perfect. Except in a few minor particulars, such as increasing the Commissioner's salary, limiting the time of applying for patents, on the part of inventors, who claim priority over existing patents, etc., no further legislation is at present required.

How much more straight-forward and common-sense like is this liberal and simple bill of Mr. Chaffee, of the House, to the oppressive and complicated propositions of Mr. James, of the Senate.

Ross Winans vs. N. Y. & E. R.R. Patent Case

In the Northern Circuit U. S. Court, July 17, at Canandaigua, the case of Ross Winans against the New York and Erie Railroad, for infringement of his patent on eight-wheel cars, was decided in favor of the defendants. The trial lasted for five weeks, and was conducted by the following distinguished counsel—C. M. Keller, Seward, and Blatchford, of New York, for the plaintiffs; and by William Whiting, of Boston, E. Stoughton, and B. B. Eaton, of New York, and W. W. Hubbell, of Philadelphia, for defendants.

This case was one of a series instituted by the plaintiff against a great number of our railroads. The nature of the complaint and defence will be found on page 100, this volume SCIENTIFIC AMERICAN, containing a report of the trial between the same plaintiff and the Harlem Railroad Co., which was then terminated by the jury being unable to agree. The present decision seems to be positive in its results, as, it is stated, the plaintiff declines to take up the case to the U. S. Supreme Court. The decision is one of deep importance to all the railroads in our country.

The Newfoundland Telegraph Cable.

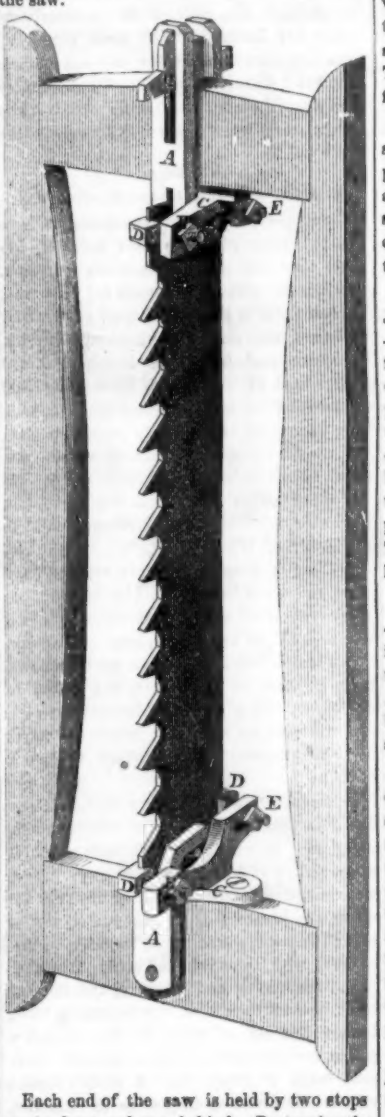
Since our last issue, news have arrived in this city of the successful laying down of the second submarine telegraph cable between Cape Breton and Newfoundland—a distance of 80 miles. A great number of hands are employed by the Telegraph Company in completing the line through Newfoundland, and it is supposed that in the course of two months at farthest it will be finished to the point where the great Atlantic cable is to be laid down.

Recent American Patents.

Machine for Making Rope.—By Thomas G. Boone, of Brooklyn, N. Y., opposite New York City.—Consists chiefly in a certain arrangement of well known parts and in certain novel devices for twisting together the strands and aying them into rope, whereby the axes of the strand spindles are brought to positions in line with the axes of the laying spindle, and no rotary motion of the strand spindles is required. The machine is thus enabled to be driven at a much higher velocity than is practicable for other rope machines now in general use, and with much less power. The machine is also brought into a more compact form.

Improvement in Saws.

By Thomas M. Chapman, of Old Town, Me.—In this invention the saw is attached to the sash by stirrups, A, in the usual manner, the upper stirrup being fastened by key bolt B. The improvement consists in the application of stocks, C, and the employment of stop bolts, D, for the purpose of steadying and readily adjusting the ends of the saw. The stops, D, are supported on the stocks, C. The ends of the stops are slotted so as to receive the edges of the saw.



Each end of the saw is held by two stops one in front and one behind. By turning the nuts, E, which secure the stops to the saw, the stops will be changed in their position and the saw adjusted accordingly. The common method of holding saws is to drive wooden wedges between the saw and the stirrup.

By the use of this improvement the saw is always firmly held in place, but may be conveniently removed or adjusted even by an inexperienced person. The stirrups may also be made lighter. The invention is one of great simplicity, saves much time, readily applied, cheap of manufacture, &c. It is highly esteemed wherever used. For further information address the inventor as above. Patented Nov. 14th, 1854.

Improvement in Car Wheels.—By A. C. Ketchum, of New York City.—This invention relates to the construction of the wheel in two parts, for the purpose of providing against cracking in cooling, and of renewing the tread when worn out without removing the hub from the axle. It consists in a peculiar method of fitting and securing the two parts of the wheel together, which would require drawings for explanation.

Improved Door Knob.—By Henry H. Elwell, of Meriden, Conn.—Consists of a novel method of dividing and securing the shank which connects the knobs, so that the knobs may be easily adjusted to doors of varying thicknesses. This improvement insures greater strength than devices of this kind have hitherto presented.

Improved Harvester.—By Carlos W. Glover, of Roxbury, Conn.—Consists in placing a rocking V-shaped or double cutter within each finger, and over each cutter the ordinary sickle works. The parts are so arranged that the sickle is made to cut much more effectually than those in present use, and without the danger of being clogged or choked by the grass or grain.

Improved Turning Lathe.—By P. C. Cambridge, Jr., of North Enfield, N. H.—This invention relates to lathes for turning beaded work for chair stuff, furniture legs, etc. It consists in the employment of a sliding carriage with tool holders attached in a peculiar way, polygonal gauge racks, collar, and stationary cutters. The above parts are arranged and combined to produce remarkable results. The rough timber is changed into ornamental forms with great rapidity.

Head Block for Saw Mills.—By Joel Dawson, of Barnesville, Ohio.—Consists in the employment of a curved lever to which a pawl is attached, an adjustable oblique board, and a screw or pin, so arranged that the back or tail end of the saw is properly set at each vibration or stroke of the carriage.

Machine for Making Metallic Tubes.—By J. J. Speed and J. A. Bailey, of Detroit, Mich.—Consists in drawing out or forming pipes from a short thick tubular casting, by means of vibrating dies or hammers. The casting is placed upon a short mandrel, and operated upon by the dies while on the mandrel, the casting being rotated and fed between the dies by means of a nut and screw. It is said that the tubes made by this improvement are superior to those drawn in the usual manner. The sale of the above patent, we understand, has been negotiated at $125,000.

Marble Saw.—By Ira Carter, Malone, N. Y.—Consists in giving the saws a lateral vibrating motion while the saw frame is operated by means of the rods, arms, levers, and racks. Applicable to the sawing of two sides of a block of marble at once, the cuts being made at any desired angle.

Stone Dressing Machine.—By A. M. George, of New York City.—Consists in attaching a series of knives or cutters to toggles, which are placed in a sliding frame. Said toggles are so operated that a reciprocating motion may be given to the knives or cutters by means of the arms placed upon the rotating shafts, one at each side of the toggles. As the shafts rotate the arms act upon friction rollers placed at the joints of the toggles, and cause the cutters to rise and fall with great power.

This improvement obviates the principal objection which exists in nearly all other stone dressing machines, viz., friction. In general, the friction is so great as to render the machines useless in a very short time, involving frequent and costly repairs.

Interesting Experiments with Timber.

At the time of going to press some very interesting experiments are being conducted at the Novelty Works, this city, in breaking machine-bent and natural ship knees to test the relative strength of both kinds. The experiments are being conducted under the charge of officers of the U. S. Navy, and we have had the pleasure of being witnesses to them. In our next number we will be able to give a full report of the results. Some new and interesting facts, respecting ship timber, have already been developed by these experiments, and more may be eliminated.

Recent Foreign Inventions.

Gutta Percha Photographs.—In producing common photograph pictures on glass, collodion (a preparation of gun cotton dissolved in chloroform) is spread, in a thin coat, upon a plate of glass, and is rendered sensitive, by iodine and nitrate of silver, to the light. It is then placed in a camera obscura to take the impression of any object, and the picture is developed by afterwards dipping it in a solution of tanic acid and other chemicals. The picture has its surface protected with a thin coat of varnish, and is kept upon the glass as a negative picture for taking positive copies of it upon prepared paper (photographic paper). These glass negative pictures are liable to be broken, therefore the pictures are sometimes transferred to sheets of paper to allow them to be easily carried about, and less liable to be injured. But the removal of such pictures from glass to paper is a much inferior method to a new process lately patented by F. S. Archer, London. It is as follows :—

The negative picture is produced in the ordinary manner upon the collodion film on a sheet of glass, and it is fixed and dried in the ordinary manner; it is then dipped into a solution of gutta percha, and after draining off the excess it is dried by a gentle heat, and a nearly transparent film of gutta percha will be found upon the collodion. If the film is not sufficiently thick this operation is repeated one or more times until a sufficiently thick film of gutta percha is formed. The whole is next immersed in water, which causes the collodion to separate from the glass and come away with the film or sheet of gutta percha firmly adhering to it. These films or sheets are sufficiently transparent, and are tough and flexible, and may be handled without injury, where they may be preserved in a book or portfolio. The inventor employs these films for producing the positives in the same manner that the ordinary glass negatives are employed. They may be placed with either side in contact with the paper, according as it is wished to obtain a correct or a reversed picture. In producing the negative picture in the camera, the sheet of glass may be placed either with the collodion surface towards the object, or with the plain surface towards the object. In lieu of glass a smooth sheet of silver or other metal or material which is not injuriously acted upon by the chemical agents employed, may be used.

The solution of gutta percha should be made with a solvent like benzole, which evaporates with rapidity.

The plate may be coated or covered with a film of gutta percha before applying the collodion, which is afterwards poured upon it in the ordinary manner. The picture is then to be produced and fixed, and washed and coated with the gutta percha, and removed from the plate, as described—thus a collodoin film coated on both sides with gutta percha will be obtained.

If the glass plate be covered with a stout film of gutta percha before pouring the collodion upon it, as above mentioned, the picture may afterwards be simply varnished with any suitable varnish, instead of the gutta percha solution, and then removed from the plate mentioned.

Double Weaving.—William Norton, of York, Eng., has secured a patent for weaving two webs of cloth at once in one loom. He employs two foundations of warps and two shuttles, and these are placed one above the other with separate warp and breast beams. There are two shuttle raceways on the same lay, and a double dent reed is used. The two shuttles work across the web, one above the other, at the same time, and the operations are performed simultaneously. Two webs of cloth are thus produced at the same time in one loom, and thus, in a factory, space is economized by the double amount of work being executed in the same space in one loom. The looms, also, must cost less than single looms, in proportion to the amount of work they can execute. These looms, however, have this serious defect; the operative or weaver cannot well tie broken threads or notice defects in the lower web. This obstacle to their usefulness will prevent their introduction into general use.

Twilled and Plain Weaving in one Loom.—R. A. Whytlaw and James Steven, of Glasgow, have obtained a patent for a self-acting mechanical arrangement in looms, whereby alternate twill and plain weaving can be executed in power looms. Four heddles are used, which are operated by four levers that are depressed by cams on a revolving shaft, which makes a revolution during the time that four *picks* are thrown by the shuttle. When the twilling action is required, the four heddle levers are worked separately in the proper rotation to make the twill; but when plain weaving is required on the web, the heddle levers are coupled in pairs, and the cam, as it comes round, actuates each pair at once, as with two heddles in plain work; the four heddles are then arranged precisely as in plain cloth weaving. In the loom of the inventors, the change from plain to twilled work is done by a self-acting device, and peculiar fashionable fabrics, part twilled and part plain are thus woven.

Manufacture of Iron.—Charles Sanderson, of Sheffield, Eng., has taken out a patent for the employment of copperas or sulphate of iron by adding it to cast-iron while in a molten state, which he states acts as a reagent, uniting with the silicon, phosphorus, arsenic, and other impurities in the iron, and carrying them off in the form of scoria, thereby producing iron castings of far greater strength and purity. Our molders can easily make an experiment to test this invention. Let them pound up some copperas in a mortar, and add about a pound to the hundred pounds of iron—but try it on a small scale first—taking care to skim off the scoria when smelted, and see what the effect will be.

Notes on Patented Inventions.—No. 15.

Cements.—No class of compositions have received more attention than cements, because they are used for so many purposes. Cements for cisterns; cements for cellar and kitchen walls to keep out damp; cements for roofing houses, and other kindred purposes, have been used from time immemorial, and will be used to the end of time. The best composition for such purposes may yet have to be discovered, but certainly some very good cements have already been discovered and patented. For making a hydraulic cement that will set under water, a patent was secured on December, 1833, by A. B. MacFarland, and T. F. Purcell, of Williamsport, Md. Unslacked quicklime in powder, one per cent. of good sand, and about half a pound of copperas to every gallon of water were made up into a mortar, and put on quickly, as it set rapidly. When it was desired to make a harder cement, some sulphate of manganese was added to the water. This cement dried under water, and was used for cisterns. Iron is the ingredient in hydraulic cements, which renders it durable.

In August, 1834, D. Balcom, of Northampton, Pa., obtained a patent for covering roofs, walls, &c. It consisted of 8 parts tar, 4 of resin, and 12 of finely pulverized clay. These were mixed together and boiled until all the water was evaporated. It was laid on with a trowel, and was stated not to be liable to run or crack with solar heat and cold. The clay is non-conducting and fire-proof, but this cement was not then new. In February, 1835, Lyman Garfield, of Troy, N. Y., secured a patent for a cement for covering roofs, stopping leaks of joints, &c. A paste of india rubber dissolved in turpentine or naphtha, was first laid down upon the roof, then sand, lime, ashes, and earth, were sifted over it, or these were all mixed together to the consistency of mortar, and spread by a trowel. He also described another cement in his patent, consisting of gum copal varnish, equal parts of sand, coal, or wood ashes, some oil, some hydraulic cement, and clay. With this cement he made pipes, and by using a sufficient quantity of clay it made a fire-proof cement. All these ingredients mixed together will make a very good, but somewhat expensive roof cement.

O. Parker, T. Clowes, and Lyman Garfield, secured a patent in August, 1835, for making coffins of hydraulic cement. In September following, Obadiah Parker, secured three patents, all for applications of hydraulic cements mixed with stones, marble dust, &c., to form ornamental castings on stone, by molding. Common hydraulic cement, is entirely unsuited for such purposes, and the patents could not have been useful. In January, 1836, Levi Kidder, of New York, obtained two patents for covering the outside of wells, cisterns &c., with hydraulic cement, to prevent the influx of outside water,—such an application of the cement covered no invention. On the same date John White, of Syracuse, N. Y., received a patent for coffins of hydraulic cement; it was for an improvement on such cement coffins, for which he had obtained a patent in the year previous. They do not seem to have taken with the public.

In September, 1842, C. Lyons, of New York City, secured a patent for a cement composed of coal tar, six pounds, gum shellac half a pound, and rosin one pound. This cement was applied hot to wooden boxes, to render them impermeable to water. It is good for this purpose, but the same materials had been used for a like purpose before.

In April, 1844, E. Deutsch, of France obtained a patent for a cement and fire-proof paint. It was composed of distilled asphaltum 100 parts, linseed oil 100 parts, 100 of tallow, 100 of india rubber, and 25 of the protoxyd of lead, all mixed together, to which were added, marble dust, sand, and the oxyds, of any of the metals, and 30 per cent. of sulphur. This makes a very good, but expensive cement.

These are some of the patents which have been granted for cements; and the substances of which they are composed embrace all the ingredients used in the oldest and most modern cements. They are public property, and can be compounded as any person may see fit. Tar, oil, and india rubber, are for repelling moisture, and imparting elasticity. Resin, and asphaltum, repel moisture also, but are not elastic. These substances are combustible. Marble dust, lime, sand, oxyd of lead, iron, and plaster of paris, are for rendering cement fire-proof, hardening it, and preventing softening by the heat of the sun.

Alum mixed in solution with plaster of Paris, then calcined and ground fine, makes a cement by mixing it with water that is excellent for filling up the seams of burr stones. Very hard stucco ornaments not required to be exposed to the weather, can also be made of it. Iron filings, sal-ammoniac and sulphur mixed together with water, form a hard cement for the joints of iron castings. Common lime and sand make the mortar or cement which has been employed from the dawn of history to the present day for cementing the joints of burnt brick, and stone walls. No improvement, certainly, has been made in it for the past 500 years at least.

(Reported for the Scientific American.)

Trial of Mowing Machines.

A trial of mowers under the charge of the Lewis Co. Agricultural Society, N. Y., took place at Honesville on the 7th inst., the President and six members acting as a committe of judges—but no premiums were awarded.

The piece of grass land selected as the spot upon which to test the machines, was mostly heavy clover, some loged, but nearly all standing erect. Each machine had 1 3-4 acres allotted to it, one-fourth of which was seeded grass land belonging to a strip running the whole length of the field.

First: Ketchum's machine, drawn by a pair of stout horses used to it, having operated it for two or three years. They were driven by the Agent of the machines for Lewis County. It had a strong side draft, and had the horses not been used to it, they would have been much worried. It did not cut the grass very even, but it was not inclined to clog, and it attracted attention for simplicity and apparent durability. Time of operation 1 hour 40 minutes.

Second: Allen's machine was drawn by a span of young horses never before attached to a mower, but they did their work easy. This machine had but little side draft; had a very high speed of knife bar, and was generally liked. Time of operation 2 hours 5 minutes.

Third: Manny's machine with Wood's improvements was driven by a good team, but not much used to mowing machines. Their speed was slower than the others, but the machine cut a wider swath. This machine had a reel on it; it cut the grass more evenly and regular. Time, 1 hour and 35 minutes.

Fourth, De Wolf's machine—a new one embracing what is considered an improvement relating to the connection of the tooth bar and cutter with the driving gear frame by a ball and socket joint, to adapt it for uneven ground. The team was unequally matched, and fretted much, but the machine operated well. Time, 1 hour and 40 minutes.

Result.—The committee were unable to agree; four were in favor of Ketchum's and three for Manny's, with Wood's improvement; it turned out, afterwards, that three of the committee had Ketchum's machines, and this perhaps, inclined them to favor it. But after all, this test of these machines was not satisfactory, as it was impossible to ascertain the relative draft of each, as there was no dynamometer used—unfortunately one could not be obtained.

This trial attracted a great number of farmers from different sections of the country, all of whom manifested great interest in the results, and appeared to be satisfied with the benefits of mowing machines, as every machine on the ground was sold on the spot by the agents of them. J. C. H.

Lowville, N. Y, July, 1856.

Artificial Writing Slate.

Writing on natural slate is produced by the pencil being abraided, while drawn upon the slate, thus leaving its abraided particles on the slate in such characters as the operator may have designed. The slate must be harder than the pencil used, or the latter will produce scratched characters indented in the slate. This is a key to the nature of an artificial slate for writing.

Any composition of adark color, and of a comparatively hard smooth surface, when placed on wood, and which will abraid the point of a slate pencil, will answer the purpose of a writing slate. Now what composition will effect this? Glass has a fine smooth surface, can be easily washed, and it is much harder than common slate pencil. Will a composition of glass answer? The surface of common glass is so smooth, that it will not abraid the point of a slate pencil; it is also so light in the color, and being transparent, it will not answer. But if we use a plate of ground glass (the surface of which is roughened) and place a sheet of black paper behind it, a writing slate will be produced. Here then, we have a key to a *composition* that will produce an artificial slate. If we take some fine pounded glass, or ground white sand, mix it with some thin glue, and cover smoothly the surface of dark colored paper with it, and allow it to dry, the slate paper that used to be so common in pocket-books, will be produced. If we paint a smooth board, with a dark color for a ground work, then lay on a composition of glue and ground glass, we will have an artificial slate. It is best, however, to lay it on in a series of coats, and allow each to dry. But this artificial slate composition has the defect of being easily injured by water, as the glue is soluble, and the slate requires frequent washings. We must therefore mix it with some composition that will allow it to be washed. There are various varnishes, such as gum shellac dissolved in alcohol or common gum copal varnish. If ground glass be mixed with such a varnish, and laid on, it will make an artificial slate that can be washed with *cold* water. The ground-work may be black paint mixed with ground glass, and its surface may be coated with ground glass mixed with the varnish.

A little fine emery powder, mixed with the ground glass in the varnish, renders it superior,—as its particles are very hard,—for abraiding the point of the pencil. This slate composition should be laid on with great care—its surface should be perfectly level, and it should be allowed to dry perfectly before it is used. Large slate boards may thus be easily made for school rooms, in place of common black-boards and be far more durable.

It is best to mix some drying oil with any of the gum varnishes employed in making artificial slates.

TO CORRESPONDENTS.

G. H. P., of Mass.—We decline to publish your letter, as it would be doing injustice to Mr. R. If his invention was old and well known at the time the patent issued, he could not enforce it against those who might feel disposed to use it, then why need you be alarmed. It would be very unfair in us to prejudge his rights upon more ex parte statements made by parties who may be actuated by motives of a mercenary character. We say to you, as we say to all, that our columns are not open to redress private animosities, and if you have any particular axe to grind, in this case, you will be obliged to employ some other grindstone.

James H. Hine, of Athens, Ala.—Says he is in particular need of a machine for riving white oak staves, 56 inches long, from 3 to 6 inches wide and 3-4 to 1 inch thick. He wants a machine capable of doing more and better work than can be done by hand.

H. B. H., of Ohio—We have not yet received your model or draft. Your friend has been very negligent in his attention to the business.

J. C., of Ohio—We cannot say why the lathe improvement you speak of is not in use. You could not patent it.

M. & P. of ——.—Your machine for re-sawing boards appears to contain patentable novelty. If you will inform us where you reside we will send to your address one of our circulars of information.

J. W. & A. Frost, of Orono, Me.—Wish to correspond with some one who can furnish them a machine for making iron nuts.

G H., of Ill.—If, as you say, you are a poor inventor, we advise you to abandon your proposed invention. A perpetual motion, "a compound power of levers, and a device for propelling sleds upon ice," are not calculated, in our opinion, to make you a very rich man. In our judgment you are wasting your time and means upon unprofitable subjects. Your gun for fighting Indians, etc., may be new, but we have no means of judging on this point without the aid of a suitable sketch and description. We would suggest that you turn your attention to some other subjects more likely to prove profitable than either of the inventions you name.

J. E. R., of Mass.—The information mentioned by you would be very acceptable.

W. W. D., of Cal.—There would be no chance to procure a patent for simply placing a propeller at the stern of a vessel. Two propellers, one at the stem and one at the stern would afford no advantages. In the first place, it would require more power to operate the two: in the next place, it would increase the expense. A better plan than you propose, would be to increase the size of the stern propeller, and apply the increased power of the engine to drive it. Upon more mature reflection we think you will agree with us.

J. H. Ellicott, of Baltimore, Md., wishes to purchase the best stave machine to work from rough green timber.—Will some of our readers who have such machines take Mr. Ellicott into their kind consideration and inform him of the cost, etc., of the machine.

T. M., of R. I.—We do not know of anything about Horne & Co., nor of their artificial honey. If you have a good situation you had better maintain it, instead of taking up a scheme of doubtful utility.

J. S. C., of N. Y.—Air confined in a vessel will not expand to a greater bulk when forced out, if it has not been under compression. If sunk below water in a box it will rise through the water and cause a vacuum. A porous body will gradually distend up to a certain point when placed in water. In a good vacuum water will boil at 67 degrees.

P. H. W., of N. Y.—The only way to obtain an account of the number of paper mills in the several States is by the U. S. Census, or the census of the States. The inclination of the magnet is 23 deg. west of north, London.

J. D. H., of Ill.—It will afford us pleasure to see your water engine in operation, and to examine it when you come to this city.

E. F. B., of N. Y.—Application was made some months since for a chemical writing pencil, the principle of which is based on the use of a deliquescent salt. It produces permanent chemical marks. Red and blue pencils are now in common use. They resemble the common pencils, but are a mixture of the common hard crayon and the lithographic crayon.

M. G. C., of N. H.—Were the wires in the submarine telegraph cables no better insulated than the wires on terra firma, they would be inefficient for the purpose.—Very powerful batteries must be employed for the Atlantic telegraph cable, and its insulation must be perfect Judging from the difficulty of working long lines on land many doubt its success; but we believe it can be operated.

A. McC., of La.—We may at some future period publish articles on the subject mentioned in your letter.

G. L. B., of Ark.—Yours has been received.

M. J. W., of Ohio—There is not the slightest chance for a patent on your car coupling.

Money received at the SCIENTIFIC AMERICAN Office on account of Patent Office business for the week ending Saturday, July 19, 1856:—

W. M. P., of O., $27; W. S., of Wis., $25; I. F. B., of Ga., $10; D. A. D., of Fla., $50; N. & P., of Mass., $30; J. F. D., of Iowa, $20; J. E., of Ill., $255; R. U., of Mich., $27; C. H. B., of Me., $10; J. S. T., of Conn., $250; P. A., of N. J., $25; H. G. Jr., of N. Y., $30; R. H. & Co., of N. Y., $40; M. E., of Mich., $25; A. R. M., of Conn., $35; B. & G., of ——, $10; T. S., of N. Y., $35; C. W. & Co., of M. T., $10; S. M. Co., of Mass., $250; E. K. H., of N. H., $30; M. G. H., of N. Y., $30; F. N., of L. I., $20; J. H. Jr., of N. Y., $35; G. S., of N. Y., $30; G. W. O., of Ind., $25; J. L., of Ill., $25; P. B., of N. Y., $10; G. C. H., of N. J., $30; B. M. & DeW., of N. Y., $200; P. T., of N. Y., $10; F. O. M., of O., $25; D. G., of O., $25; I. S. S., of Conn., $30; H. B., of L. I., $200; E. & P. C., of Pa., $50; A. Van P., of Wis., $30; C. S. P., of Pa., $25; W. H. D., of N. Y., $25; S. & S., of N. Y., $7 50; W. J. S., of N. Y., $50.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 19:—

C. S. P., of Pa.; C. W., of Conn.; W. H. D., of N. Y.; H. V. & B., of N. Y.; R. U., of Mich.; W. S., of Wis.; P. A., of N. J.; J. H. Jr., of N. Y.; A. R. M., of Conn.; H. A., of Mich.; C. W. & Co., of M. Ter. (2 cases); G. W. O., of Ind.; P. O. M., of O.; D. G., of O.; S. W., of N. Y.; I. S. S., of Conn.; W. M. P., of O.; N. H., of N. Y.; W. I. C., of N. Y.; W. J. S., of N. Y.; S. & S., of N. Y. J. B., of Ill.

Important Items.

NEW EDITION OF THE PATENT LAWS.—We have delayed for some months the issue of another edition of the present Patent Laws in the expectation that Congress would most certainly, at this Session, make some simple amendments to them—such as are earnestly sought for by inventors and patentees. As there is now little hope that any such changes will be made during the session, we have issued a complete edition of the laws, including the regulations of the Patent Office—copies of which can be had for 12 1-2 cents each. If any of our readers, who have ordered the laws and regulations, and have not received them, they will be promptly supplied upon renewing their requests by letter.

TO THE UNFORTUNATE.—We are no longer able to supply the following back numbers of the present volume Nos. 6, 12, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 27, 28, 29, 30, 34, 35, and 37. Such numbers as we have to furnish, are gratuitously supplied to such subscribers as failed to receive them; and we would take occasion to state, that any person failing to receive their paper regularly, will confer a favor by notifying us of the fact. Missing numbers should be ordered early, to insure their receipt, as an entire edition is often exhausted within ten days after the date of publication.

MODELS.—We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

PATENT CLAIMS.—Persons desiring the claim of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and date of patent when known, and enclosing $1 as fees for copying.

RECEIPTS.—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

Science and Art.

United States Mint.

We learn by the Philadelphia *Ledger* that the Mint in that city has undergone extensive repairs during the past twelve months. It has been so altered as to render it entirely fire-proof, and the refining room is so enlarged as to enable $9,000,000 of gold to be refined per month. In the rolling department there is an engine of 150 horse-power, to which one of Silver's Governors (illustrated in the SCIENTIFIC AMERICAN last week) has lately been attached, and which, it is stated, gives great satisfaction. In the assay room, the old *sand bath* used for heating the acid vats, has been superseded by a gas apparatus, invented by H. W. Field, of the Mint, in London. The common gas from the street pipes passes through fine perforated tubes, and its flame is found more uniform in its results than heat from coal in a furnace. This apparatus is stated to be efficient and convenient.

Among the many new apparatuses in the mint, there is one of no ordinary character. It is the ingenious machine invented by M. Seguier, and constructed by M. Deleuil, of Paris, and was described in our reminiscences of the French Exhibition, on page 53, this volume SCIENTIFIC AMERICAN.

"Its object is to determine whether the planchets or pieces of gold or silver, ready for adjustment and coinage, are of proper weight, or within certain allowed scope of deviation. It accordingly separates them into three divisions, of *right*, *heavy*, and *light*. To accomplish this, the machine has five balances or testing instruments; the beam is of the usual form, made and adjusted with great delicacy, but from its center there rises perpendicularly a tale wire. The planchet being pushed to its dish, is counterpoised by a just weight on the opposite dish; if the planchet is right, there is little or no oscillation, and the piece being pushed off in its turn, falls into a channel which conducts it to one of the brass pans below; but if the planchet is heavy, it draws down the beam, and inclines the upright wire, so that it touches and sets in motion an apparatus which opens another channel, and so the piece being pushed off, falls into another pan. If the planchet is light, then the opposite side goes down, the upright wire goes over in that direction, and moves another connection, by which a third channel only is open, and this carries the piece to the brass pan containing the 'lights.'"

It will dispose 200 pieces per minute, and do the work of a number of hands, and that most correctly.

Ballooning.

Several successful balloon ascensions were made on the 4th of July last, in various parts of the country. One at Manchester, N. H., by Mons. Godard, lady, and horse, is thus described by the *Mirror* of that place:—

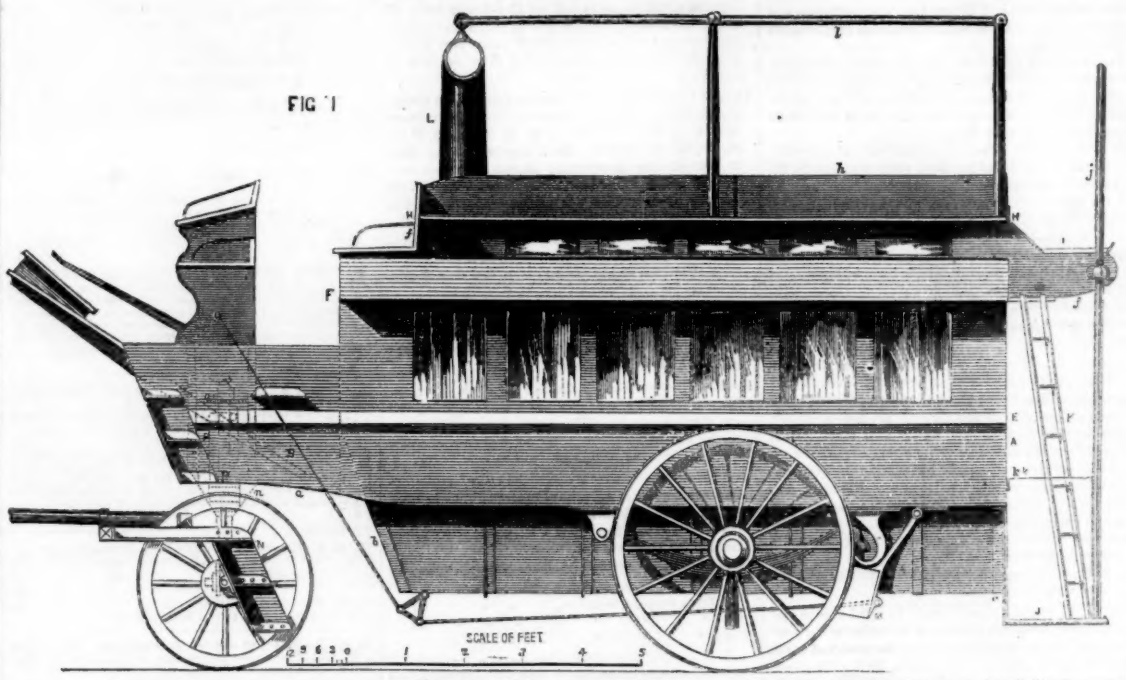
"The crowd present was variously estimated, all the way from 20,000 to 50,000. They covered over acres and acres of land, curious to see the largest balloon in the world ascend, with a live horse attached. The wind blew fresh, and Mons. Godard did not dare commence filling the balloon till the wind went down, about half-past six, as the rocking of the balloon on the ground might wear a hole in it. He went up like a kite, standing on the back of the horse, amid immense cheering, Madame Godard being in the car of the balloon alone. They went up at twenty minutes past 8 o'clock, the horse hanging his head low down, with eyes intently fixed upon the earth, without struggling a particle. They were soon high in the heavens—about 9,500 feet, according to Mons. Godard's estimate, sailing in a southerly direction. They made a circuit of twelve miles, and at five minutes before nine o'clock, landed in a field belonging to William Plumer, in Londonderry.

They threw out anchor and caught the balloon on the tops of trees, where they remained some minutes before they could get free, in the meantime the horse eating the leaves of the trees as if nothing strange had happened. The folks where he landed thought the end of the world was coming and the devil was riding through the air. The women ran into the house and shut the door, and for some minutes the man was afraid to come and unfasten the horse. The horse went to feeding the moment he landed. Mons. Godard says that when he was at the highest point that the earth all looked level, the mountains seeming no higher than the vallies. The only objection we have heard to the ascension is, that the horse did not carry as good head and tail as was shown on the bills."

Mr. Wise made a successful ascent from Poughkeepsie, N. Y. He landed near Bridgeport, Conn., having traveled over 70 miles in one hour and a quarter.

NEW ENGLISH OMNIBUS.

FIG. 1



Improved Omnibus.

Much discussion has latterly taken place in England relative to the proper form of omnibuses, the point in view being to obtain the greatest amount of sitting space without rendering the vehicle too cumbersome. We herewith present an engraving of Mr. Richard Roberts' patent Omnibus, which is one of the very latest improvements brought to the notice of our trans-Atlantic brethren. Perhaps some of our ingenious readers can invent a vehicle superior to that here shown. It is an odd-looking affair, much inferior, so far as external beauty is concerned, to our common city omnibuses.

For the accompanying engraving and description we are indebted to our worthy cotemporary the *London Engineer*:—

A A represents the body, *a a* the main side beams ("bottom sides,") which are connected together, and to the body at the fore end by the sheet-iron plate, B *b*; and at the after end by the plate, *c*, and angle iron (extending to the top of the omnibus). The seats, are attached to the under side of the beams, *a a*, and supported at their front by risers, resting upon the plate, B, and angle iron which also carry the floor. E are moldings, (made of wood or metal) to which the side stanchions are secured without reducing their scantling, consequently stanchions of little more than half the ordinary thickness will suffice, and space be economised. F are foot boards framed to the side stanchions and secured to the risers or beams, *f f*, which carry the seats, H H, and the roof: *h h* are back boards made deep to strengthen the roof; the risers, *f f*, are framed as usual, except that they contain but one row of ventilating openings, which being near their upper side, admit of the lower rail being much deeper and stronger than those in the present omnibuses; the lower rail of these risers projects beyond the body of the bus, to carry the gangway, I, (which also serves the purpose of a canopy over the entrance,) and the outer side of the foot step, J, by means of the tubular hand rail, *j*, through which water may pass from the roof. K is a ladder for passengers to ascend to the roof; *k* a ladder provided with a platform step for the guard to stand upon. L a ventilating funnel, serving also to support one end of the hand rail, *l*, the other end of which is supported on pillars. M are brakes suspended on pins attached to the main side beams, at such distance behind the wheels as shall, on the application of the brakes, cause the friction between them and the wheels to add to the applied pressure. P, a swivel pin (jointed to the fore axle) and guided through bushes in the sheet-iron cone, the swivel pin, P, is provided with a collar, P, which supports the tube, *p*, carrying a series of india rubber rings (separated by thin plates of iron) which act as springs, upon the fore axle.

The gauge of the fore wheels is made so much less than that of the hind wheels as to admit of their working between the main beams, *a a*, and of steps being attached to the splinter bar and axle outside the wheels, without projecting inconveniently into the road. The hind springs—made in the ordinary way—are fixed to the underside of the axle. The wheels and axles contain improvements not represented, by which their construction is facilitated and durability increased.

From the foregoing improvements the following advantages are proposed, namely, greater strength and durability, weight for weight, arising from the improvements in the fore carriage, and the employment of sheet and angle iron, as shown in the ends and bottom of the bus; greater stability, owing to the center of gravity being much lower, and the fore end being always borne by the middle of the axle instead of the right and left side of the "transom plate" alternately, as at present, producing an unpleasant and oscillating motion; economy of time and horse labor, arising from the fore and aft steps being so easy of ascent and descent that most gentlemen in the habit of traveling by bus may take and quit their seats without the speed being reduced below four miles an hour. Passengers may pass over the canopy, from one side of the roof to the other, and assume their seats, without putting a hand on others. The guard, being elevated, may give a better look-out, and may collect the outside fares without going in front of passengers. Simplicity, efficiency, and durability of the brake, which, when applied, relieves the springs and axle of weight, instead of adding to it, as as present.

Owing to the shortness of the fore axle the wheels turn between the main side beams instead of under them, consequently, the bus is lowered equal to their depths, and owing to the same cause the pole may be turned 90° on each "lock" with the floor of the bus within thirty inches of the fore axle; the pole, too, will have less lateral effect on the horses.

The interior is better adapted for advertising, their being a broad margin above the heads of the passengers on each side at a convenient hight to be read by those on the other side.

Castor Oil in Water.

A number of the druggists in this city advertise castor oil which, they state, is perfectly soluble in water. We think it must be glycerine which they sell under the name of castor oil; for the latter is insoluble in water while the former is not.

The machinery of the steamer *Vanderbilt* is completed and fitted up, and it is believed that this noble vessel will be all ready in the course of three or four weeks. The engines—built at the Allaire Works—are noble specimens of engineering skill.